CARE AND FEEDING
OF YOUR XJ GAS CAP

Do you smell gas even when the cap is latched shut? Does your tank not want to drain even with the petcock set to prime? Does your key not want to turn in the lock? Would you like fries with that? (Wait… scratch that last one.)

Chances are, you're going to have to take your gas cap apart, either to replace the large sealing ring around the outside, or free up a sticky tank vent. Here, we demonstrate how that's done.

First thing you'll be wanting is…

No, no. That comes *later*.

This is what you need first:

What we're caring for and feeding, right?

What you may or may not need, depending on what you're doing with the gas cap:

HCP170 Gas Cap Sealing Ring

If you smell gas when the cap is closed, 99.9% of the time, this is the culprit

HCP17710 Gas Cap Sealing Ring Spring

If the ones you have are bad, broken, or they wind up missing somehow, they can be replaced.

HCP186 Lock cylinder upper o-ring

HCP187 Lock plug lower o-ring

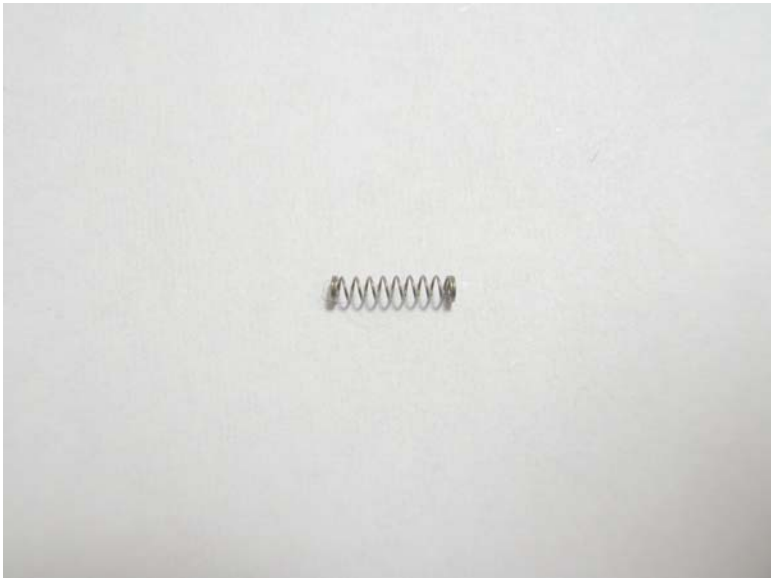
3/16” Ball valve for the vent. **HCP6414** for 440C stainless steel (good for corrosion resistance) or **HCP6415** for standard alloy steel

Retaining screws for the lock housing. Part numbers vary by finish and whether they're Phillips or allen head. Here we see our **HCP6421** Phillips head screws, 18-8 stainless steel. The small head diameter comes in handy for this close-fit application.

For every good screw, you need a good lockwasher. Available as **HCP6425** (18-8 stainless, seen here), or **HCP6426** (black oxide).

The appropriate tools (needless to say, we'll be starting with a phillips screwdriver)

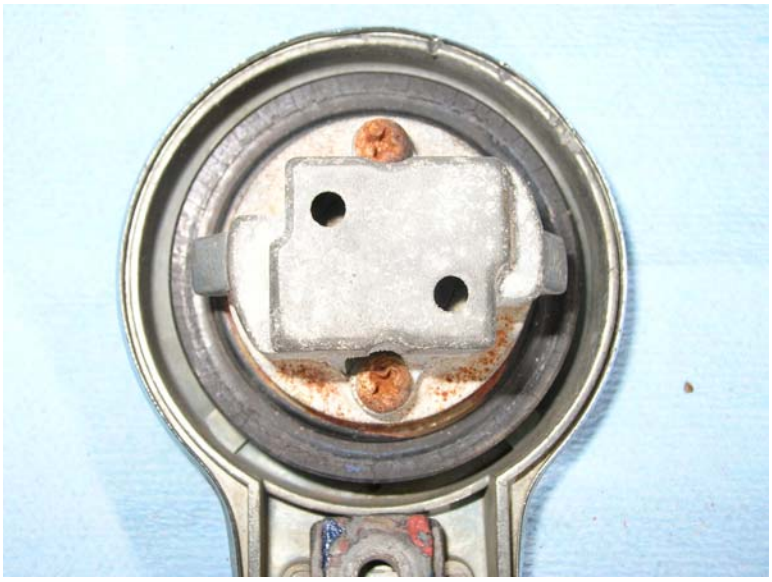
We'll be lubricating the guts of the lock plug with this later. A tub of silicone grease (not pictured) will be called for as well.



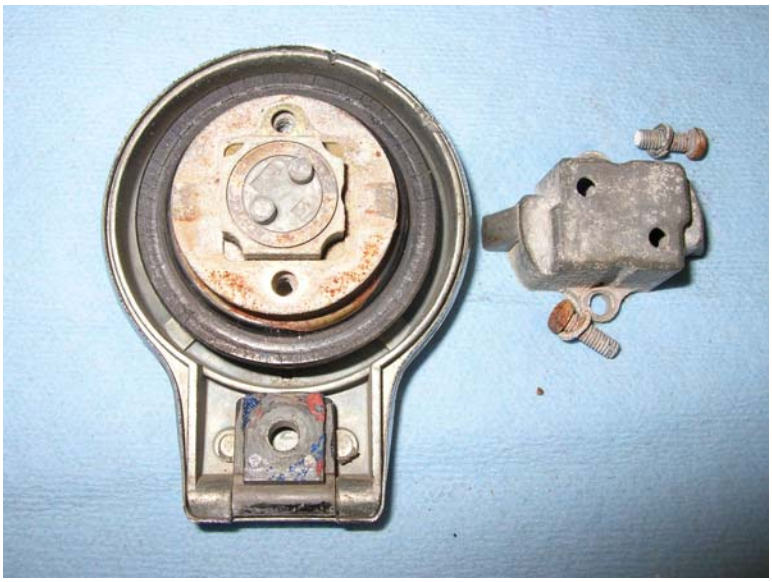
Speaking of the lock plug, you'll notice after you remove it that there are some teensy-weensy little springs in there. Very difficult to find if they go flying across the room. We now have them available as part number **HCP17708**.

This spring is one of two that go inside the latch ears (seen in Appendix A) and can be had as **HCP17709**.

Got everything? Good. Let's get cracking.

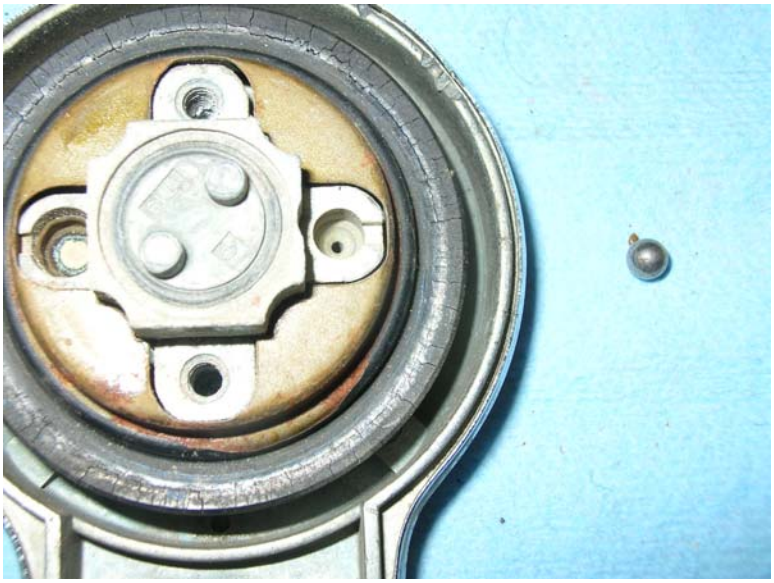


Starting point: one gas cap in dire need of an overhaul. You can see what we mean by “close-fit application” for the two retaining screws.



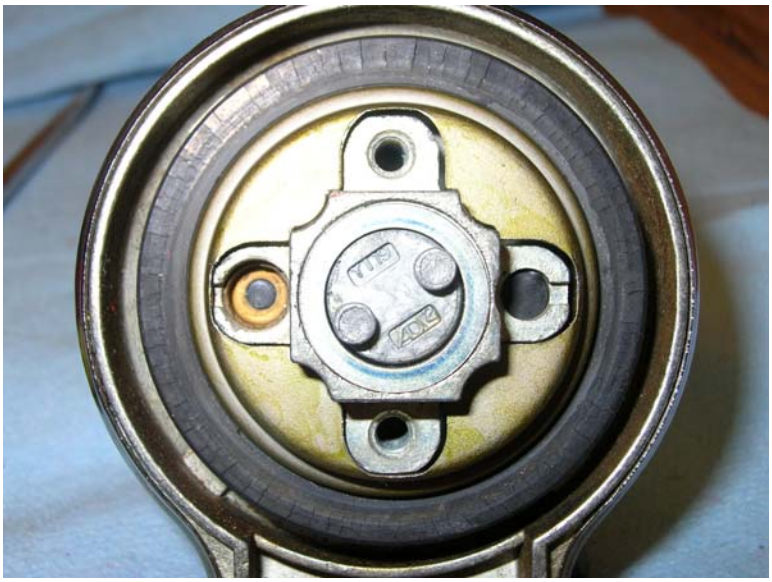
Step 1: Remove the two screws holding in the latch assembly and lift it off. Be warned that the latch ears are (obviously) spring-loaded and can go flying every which way, so be careful. We’ll demonstrate how they can be cleaned and lubed in Appendix A.

Step 2: remove the two bottom plates. The big flat plate covers the ball check valve and holds in the sealing ring; the washer-looking thingie hides the lower o-ring for the lock plug.

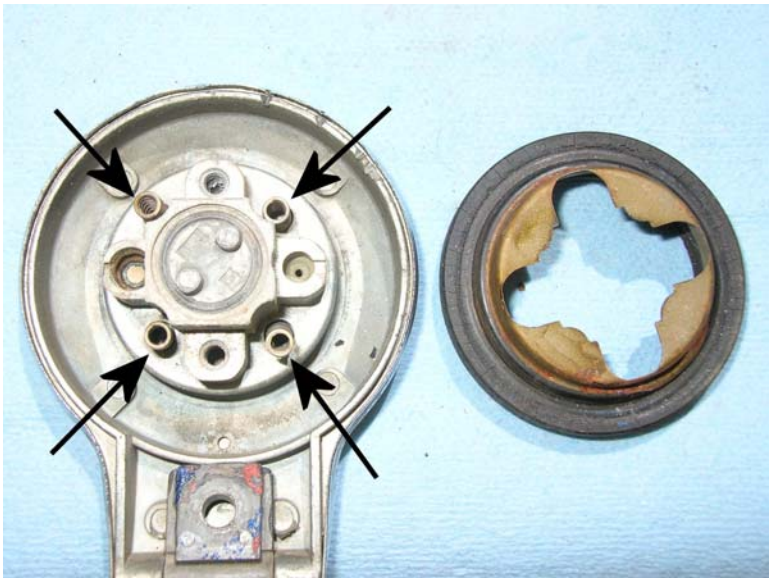


Step 3: Tip the cap over and let the ball bearing fall into your hand. Stick it in a baggie somewhere. (We're doing this so it doesn't get lost later.) You can see the exposed vent hole underneath.

Those with California-model Maxim-X models don't have to worry about a ball bearing, as those bikes have a non-vented cap (see the next picture below).



See where the vent hole has been plugged? The California X uses a different (read: non-standard) venting system, and hence no cap vent.



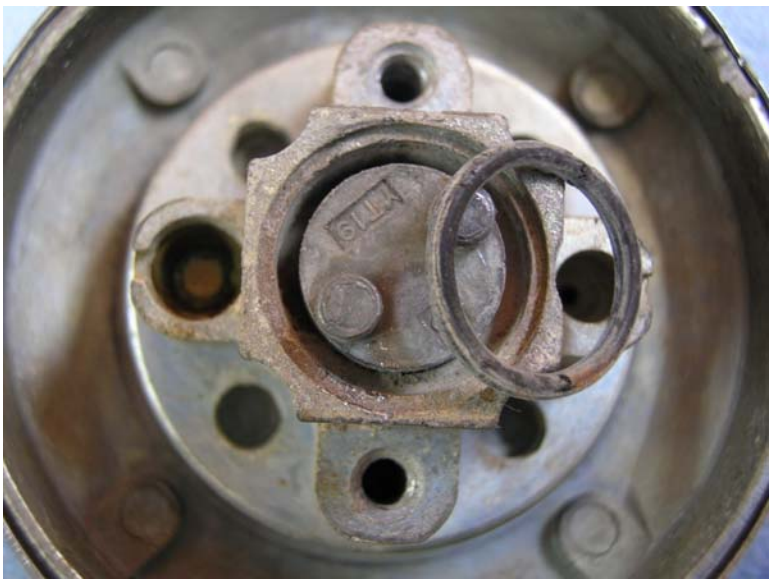
Step 4: Lift off the sealing ring (it may be a tight fit). You'll see the four springs that press the ring down against the tank filler – **PLEASE** don't lose them.

Now you know why we're changing this one out – badly cracked, and about a quarter of the lip that the cinch spring sits on is simply not there.

If this is all you're swapping out, you can simply drop the new sealing ring in and reassemble.

On the other hand, if you're doing a complete overhaul, which isn't a bad idea at that, then let's continue down the rabbit hole.

Step 5: removing the lock plug. We start by prying out the lower o-ring. A ***VERY*** thin screwdriver or knife blade will be needed here.

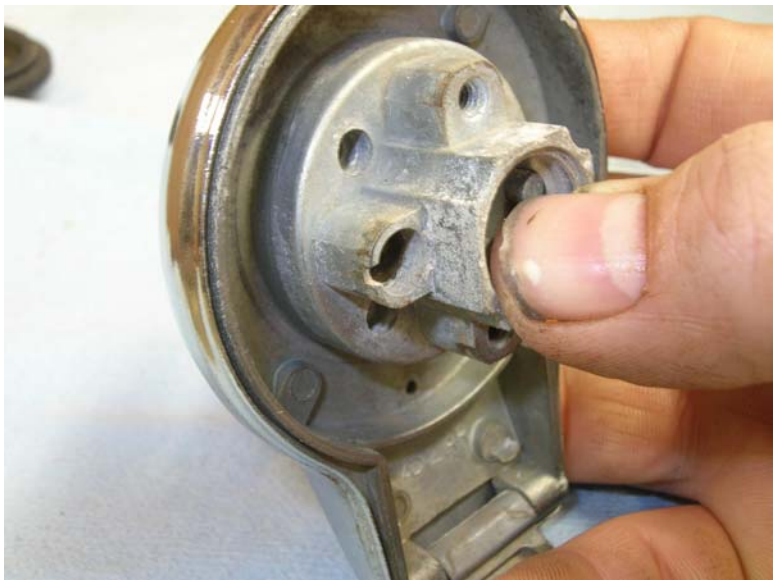


You'll likely tear the o-ring up slightly getting it out, so it's a good thing you bought that new one, right?

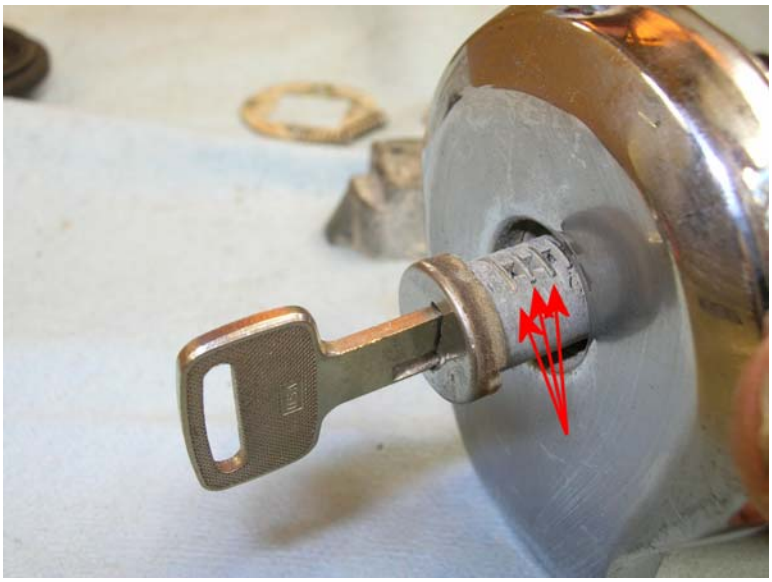
Step 6: Gaze upon the face of thine enemy. That little bit you see that I've highlighted is the retaining latch for the lock plug. That will need to be pressed inwards in order for the plug to come out, and you don't have a whole lot of room to do it.

(Apologies for the quality of the picture, but I had a hell of a time with lighting and zoom – that thing just did NOT want to photograph.)

A thin brad nail, a ***VERY*** thin screwdriver or something similar might do the trick – you might be able to use the top part for leverage, if your tool is thin enough. Keep eyeballing the latch until it looks like you've pressed it in far enough. Once that's done, you can…

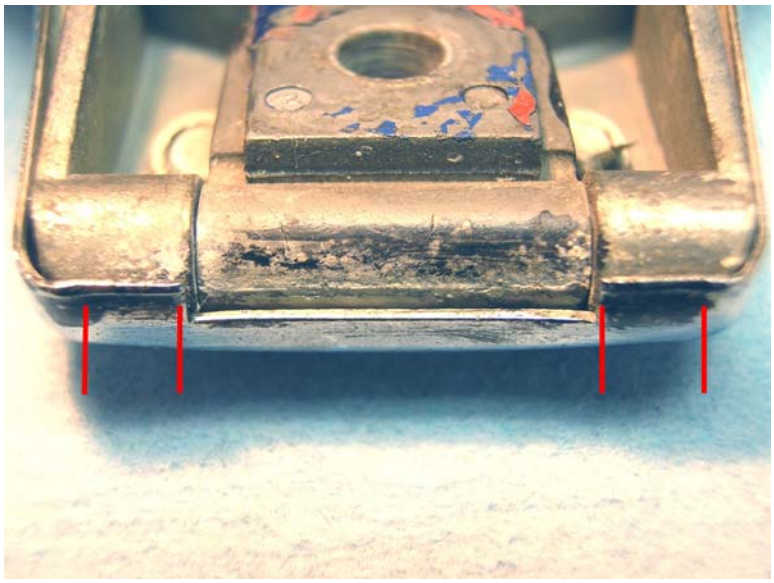


…proceed to Step 7 and push the lock plug out with one of your opposable thumbs. S-L-O-W-L-Y. Why?



Here it is from the front. See those little bar-looking things that I've pointed out? If you don't have the key inserted to hold them in place, they'll want to go flying everywhere. Yes, we'll be wanting to clean that lock plug up a bit before we put it back in. Detailed instructions are given in Appendix B.

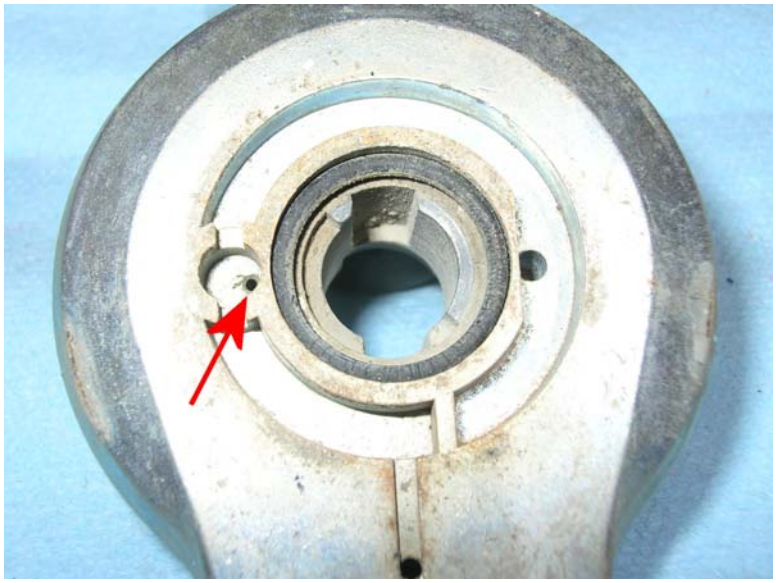
"But wait," you say. "You said there was an upper o-ring for that lock cylinder. I don't see one… where is it?" Glad you asked!



Now we move on to Step 8. To get to the upper o-ring for the lock plug, we need to remove the chrome cap. It's pretty much crimped all the way around, but we'll start near the hinge, where if you look close, you'll see the two crimp points at the bottom of the hinge.

Using (once again) a small flat blade, we CAREFULLY try and pry those crimp points away from the hinge, then work the hinge upwards until it clears the cap.

At this point, you can then switch to a larger flat blade and, levering up on the hinge, use it to pry the cap off the rest of the way. We don't wish to damage the cap, so patience and caution should be abundant here.



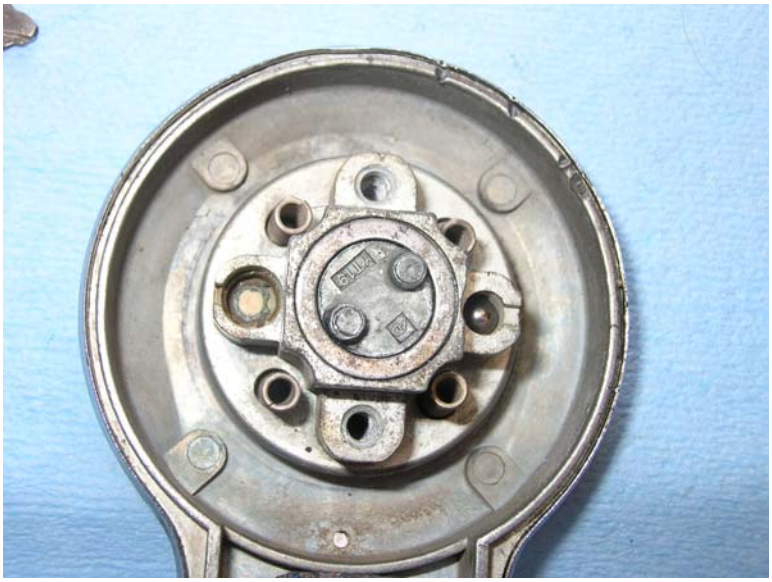
Finally, we have the chrome cap piece off, and there's our upper o-ring.

On the left, where the arrow is pointing to, is the other side of the tank vent hole.

Clean up the area with your favorite cleaner and a piece of scotchbrite pad or somesuch, then apply some silicone grease to the area, the new o-ring, and the inside of the center opening on the chrome cap. Insert the new o-ring into its home, then ease the chrome cap back into place, taking care not to pinch the o-ring.

Once you've done that and dealt with your lock plug, we can finish reassembly.

Step 9: with a light coat of silicone grease on the o-ring and around where it seats, install the lower o-ring.



Step 10: Drop the vent ball valve (new one, right?) into the spot with the hole drilled all the way through it, then put the springs back in and o-ring cover back on.

Step 11: Fresh sealing ring goes back on next. A wee bit of silicone grease around the inner lip that the cinch spring sits on. Retaining plate goes on top of that.

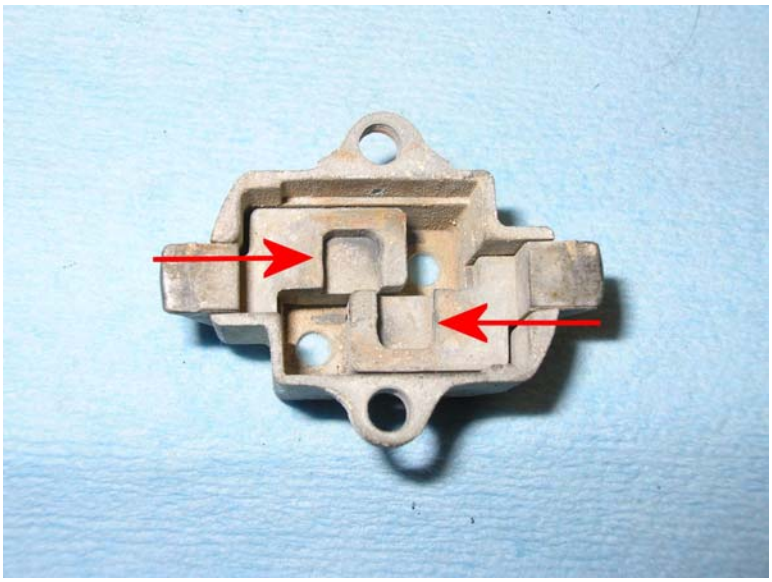
Step 12: Lastly, the latch mechanism. Fresh retaining screws and lockwashers.

Congratulations! You have earned the right to walk with a swagger, a confident smile, and to speak loudly and carry a big stick.

Oh, and **NOW** you can go have that pizza.

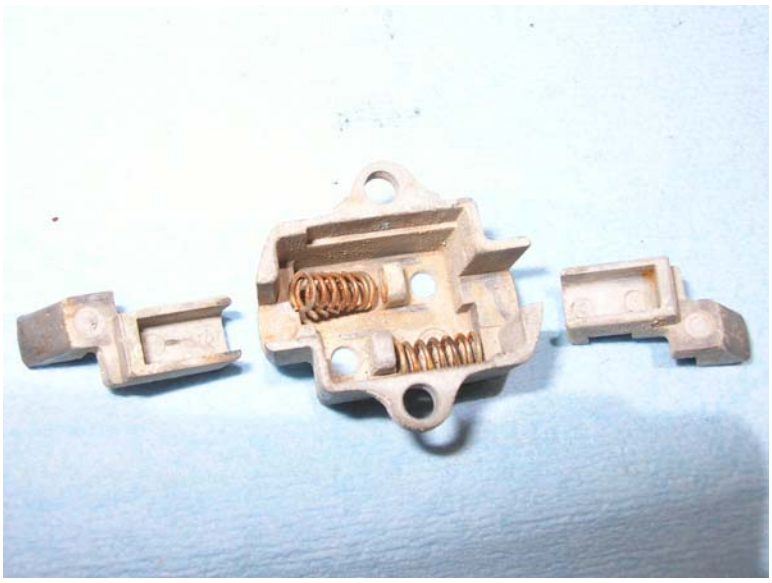
APPENDIX A: LATCH KEY KIDS

We're just going to take a couple of minutes to go over the latch mechanism real quick. It's not difficult, nor is there a lot that goes into it – it's probably just in need of a bit of cleaning.



When it's bolted in place, the two little nubs you've seen on the bottom of the lock plug sit in those little cutouts (indicated by the red arrows) on the latch ears. When the key is turned, they pull the ears in, and you can open the cap.

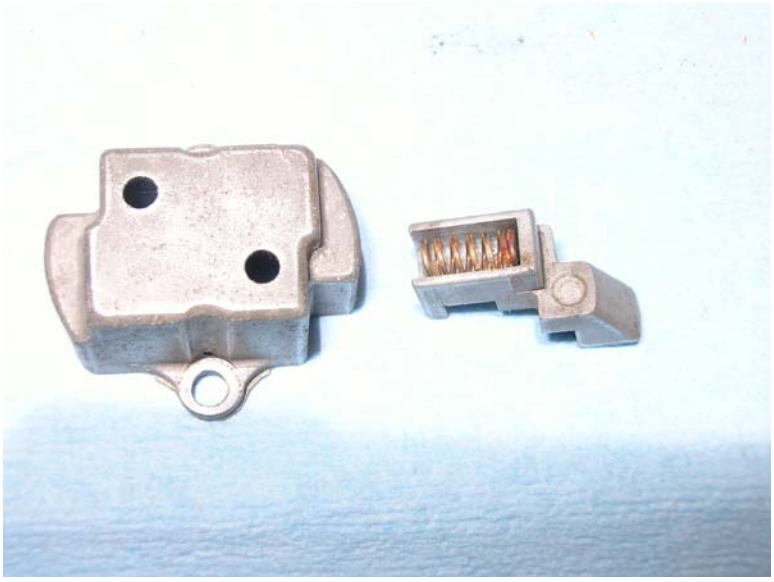
Let's see what's inside. Grab the pointy bit of the ear, and gently lift up and out.



Five parts: (1) outer housing, (2) latch ears, and (2) springs. That's all. What, you want complicated?

We grab some 600 grit sandpaper, the WD-40, and a small flatblade screwdriver might help here. Spritz the sandpaper and hit up the housing and latch ears until they look all nice, smooth, and pretty. If the springs have seen better days, now would be the perfect time to swap them out.

Now, how to get everything back together?



Quite simple, actually. First, lay one of the springs in the trough on top of the latch ear.

Then angle the latch ear into the housing so that the end of the spring catches on its post. (It helps to have the housing pointed sideways, with a slight down angle – otherwise the spring rolls out of the trough.) Continue pushing and lay the latch ear down in the housing. Repeat for the other side. Don't forget to add some silicone grease in those little cutouts that the nubs from the lock plug go into.

APPENDIX B: YOUR LOCK CYLINDER, THE PLUG, AND YOU

Here, we're going to dive into the guts of the lock itself. There aren't that many parts, but most of them are tiny, and you do NOT want to lose them, or put them back in out of order. If you do, your key won't work anymore.

To start, let's identify the type of lock. A standard "pin tumbler" lock uses springs, driver pins, and key pins of various lengths inserted into a plug. The plug is inserted into an outer lock cylinder. Where the plug and cylinder meet is known as a "shear point". When no key or the wrong key is inserted, the point where the driver pins and key pins meet does not line up with the shear point, and the plug will not rotate.

The ignition and gas cap locks on the XJ bikes work on a similar principle, but rather than the pin tumbler type, it instead uses what is known as a "wafer tumbler" lock.

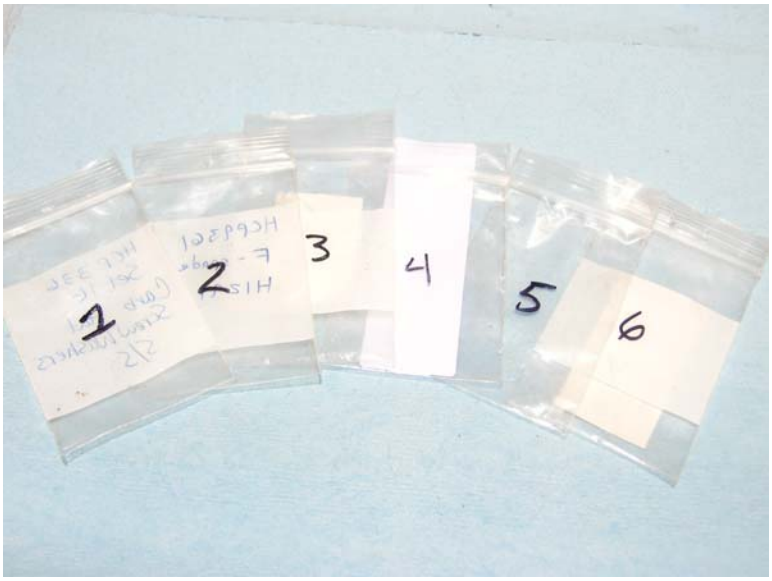
Without the key inserted, the wafer protrudes beyond the edge of the lock plug.

The protruding wafer(s) extend into the large slot at the top or bottom of the outer cylinder, depending on how the plug is installed. With the proper key inserted, the wafers retract, and allow the lock plug to rotate.

To learn more on this topic, go to:

http://www.capricorn.org/~akira/home/lockpick/

Next up: cleaning and lubricating the wafers.



So. We have teensy-weensy parts that we want to keep in order, and most assuredly don't want to lose. How do we do this?

We'll use some small parts bags we've got sitting around here. You've got plenty of these left over, right? <GRIN> Label them 1 to 6.

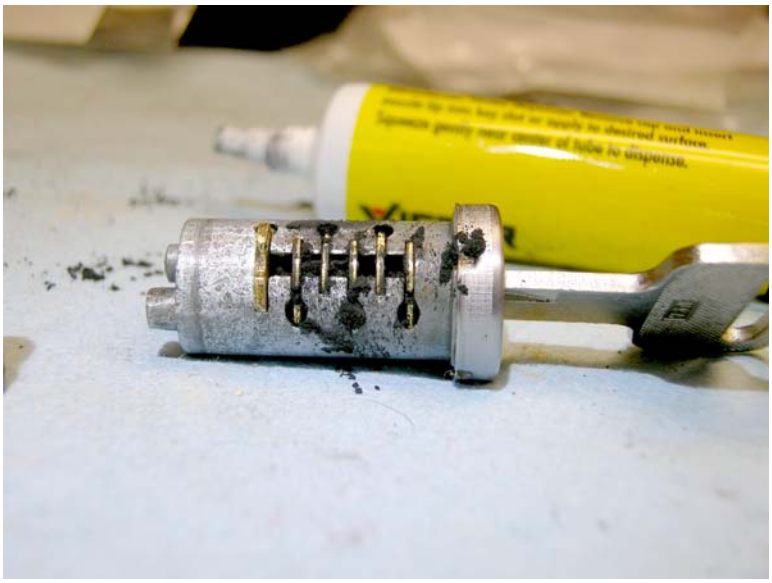
Wafer slot #1 will be at the front of the key plug, with #6 at the rear being the retaining latch. With a pair of needlenose pliers (and a toothpick for the spring, if needed) CAREFULLY remove the wafer and spring from its slot, put them in a bag, and SEAL THE BAG. If those teensy little springs go flying, they'll be almost impossible to find, and you'll have to order new ones.

You can clean up the inside of the lock cylinder, the outside of the plug, and the slots where the wafers go with some 600-grit sandpaper wetted with WD-40.

Likewise for the wafers – this retaining latch certainly needs it. (You may wish to forego the WD-40 and/or go to a stronger grit if you have a lot of buildup. If it's REALLY bad, then a dremel, a sanding disc, and a light touch.)

If you do go with the dremel, remember – we don't need to grind anything down; we're just removing gunk. The wafers need to be nice and smooth so that they'll pop up and down like they're supposed to.

Reassembly, they say, is the reverse of removal. Spring in the hole, followed by its wafer.



Once you've done all the wafers, press them down into their slots with your thumb, then insert the key to hold them in place. Then give them a good dose of graphite, both from the top, and in the keyhole as well.

Wipe off any excess graphite. Lubricate the lock cylinder and the outer plug surface with a light coat of silicone grease, then press down on the retaining latch with the tool of your choosing, and slowly slide the plug home. You should hear the retaining latch snap back into place.

See? That wasn't that hard at all.